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AGRICULTURAL.

☞ *"Agriculture is the chief foundation of a nation's power, as it not only furnishes man with food and clothing, but also with materials for the mechanic arts and commerce."*

[*From De Bow's Review.*]

Edmund Ruffin, of Va.,

AGRICULTURIST,

Embracing a View of Agricultural Progress in Virginia for the last Thirty Years.

The subject of this sketch was born January 5, 1794, in the county of Prince George and state of Virginia. In youth and throughout life he has suffered much from a feeble constitution and delicate organization. But neither his debility nor the delicacy of his structure has prevented the most untiring industry in whatever interested him, and the exhibition of an energy, physical and intellectual, which would seem to have required a strong frame, and a powerful nervous system.

His father, a gentleman of fortune, afforded him all the opportunities for a most liberal education; but he was a little erratic at the period, devoting himself sometimes with great diligence to his studies, and sometimes utterly neglecting them. Yet he was always fond of intellectual pursuits, and though his text book may have lain unopened, he was still occupied, and most frequently, with history, fiction or general literature. As he read for amusement and not improvement, fiction engaged much of his time. In the sixteenth year of his age he was sent to William and Mary College. At first he applied himself with assiduity, and advanced with great rapidity. He was especially successful in geometry, for which he manifested much fondness and a decided talent. The first examination was passed by him with distinguished credit.

But soon he relaxed in his studious habits, and was finally suspended from the institution for continued neglect to the duties of his class.

His father being now dead, he was left by an easy guardian to the indulgence of his own tastes and disposition. He returned home to a kind step-mother, without any definite object in view, or any determination of what should be his future career in life. But war had now been declared with Great Britain, and at the first muster at which he was enrolled, having reached the military age of eighteen, enlisted in a volunteer company, and soon after entered on active service. He marched with the first regiment called out from Virginia in the town of Norfolk, and served as a private from August, 1812, to Feb. 1813. He then returned home, and was permitted by his guardian to take possession of his estate. In the division of his father's land he had received, as his share, the farm called Coggin's Point, situated in the County of Prince George, and on the waters of the James River, and now celebrated throughout this state from the extraordinary improvements made there by Mr. Ruffin. He entered with industry and enthusiasm into the practical business of agriculture. Yet he did not suffer this occupation to monopolize his attention, for before the end of the year he was married.

Agriculture in Virginia had then reached its lowest point of depression. Under the exhausting system of cultivation, which had prevailed from the first settlement—a system which was truly a systematic destruction of the country—adopted in the first instance by emigrants, in order to obtain the largest immediate profit, and who were utterly regardless of its ultimate effects, and continued by their descendants, when the same cause which had induced it had ceased to exist, the land, for the most part, no longer paid the expenses of cultivation. As a patient who has undergone a long and rapid process of depletion, and has little blood left to yield to the Sangrado practitioner, such was the tide-water section of Virginia. With such culture—such impoverishment—and the prospect of a population thus situated, society was rapidly declining. It was well said by Mr. Ruffin, in an address to the people of his county, that at that time—

"Almost every man was growing poorer, or the prospects of his family becoming worse. The grade of society had been, and still continued to be, on the decline. The proprietors having no hope of the improvement of their lands, or of being remunerated for ever so great industry and devotion to their business, thought it as well to bestow very little. Accordingly, like the inhabitants of a city ravaged by the plague, they thought more of present enjoyment than of providing for future wants; and there prevailed generally, habits of idleness and improvidence, of pleasure-seeking, and neglect of business, with all their necessary consequences." The population fled from the country to seek a better fortune in the distant West. He continues: "There was scarcely a proprietor in my neighborhood, and deriving his income from cultivation, who did not desire to sell his land, and who was prevented only by the impossibility of finding a purchaser, unless at half of the then very low value. All wished to sell—none to buy. If a stranger had been inclined to settle among us, he might have chosen almost any farm in the county, and would scarcely have failed to find the owner glad to sell, and at a low price."

The county of Prince George differed but little from all the lower part of Virginia. There seemed no refuge from poverty but emigration. Many of the aristocratic mansions of this hospitable and generous population were now abandoned in silence and ruin, and the former inmates, with the remains of their dilapidated fortunes, made their melancholy way to the wilds of the West. Many a field which had descended from generation to generation of the same stock, for long years, and which had offered to successive heirs green prospects and rich harvests, now thinly clad in broom-straw and the tiny hen grass, was given up to the encroaching forest.

In this state of things, the subject of our sketch entered on his career as a farmer. He was totally inexperienced, and had no knowledge, either theoretical or practical, of his business. But in this he differed but little from older men of this period in Virginia. He gave himself up with enthusiasm to his pursuit, labored most industriously, yet labored in the dark, and, of course, often went astray; sometimes in pursuit of one "ignis fatuus," and sometimes of another. He saw clearly that the prevailing systems and practices of culture were wrong, and wandered from experiment to experiment to discover what was true. Often mistaken in views adopted "a priori," he soon tested them by careful experiment and rigid induction. Many investigations, thus pursued for a series of years by one whose logical power equalled his industry, naturally and inevitably led to great results. "Labor vincit omnia," says the Mantuan farmer.

The estate of Coggin's Point was, at that time, extremely poor, the larger part not averaging more than ten bushels of corn per acre, nor more than six bushels of wheat, on the better half of the land. Bordering it, on the river, was a tide-marsh of 300 acres, covered by water when the tide was up, but left free when the tide was low. One of the first of Mr. Ruffin's experiments was to reclaim this part of the marsh. He limited his efforts to about 32 acres, the most favorably situated, as he believed, to ensure success. After five long years' exertions, he succeeded in draining this small section, and bringing it into good culture. It produced three very large crops of corn, then three others, less and less in quantity, when the vegetable soil had so rotted away, that the level of the land was now too low for cultivation, and it was abandoned to its former element. Such has been the fate of every effort of a similar kind on soils of a similar character.

About the year 1813, Col. John Taylor, of Caroline, published his "Arator." It was received with enthusiastic eclat. There was a general belief that he had discovered the great secret of improving Virginia soils, and many anxious farmers now rejoiced, as the tempest-tossed sailor on the first sight of land after a perilous voyage. Here was presented a cure for their misfortunes; they might remain in their old homesteads and retrieve their shattered fortunes. The principal feature in his system was the protection of the land from grazing, and making the vegetable serve as manure. Another, and secondary idea, was to throw the land into high beds, in cultivating the corn crop, by deep ploughing. Mr. Ruffin became an ardent admirer of "Arator," and adopted his opinions and precepts. He had not yet learned, that the inorganic elements of soils, the mineral ingredients, are often deficient, and sometimes one or more are exhausted by cultivation, sometimes not furnished by nature to the virgin lands, and that their vegetable growth will not furnish them. He at once carried into practice the new idea, and subjected them to the test of experiment. For four or five years he used all the means of improvement recommended, and found them, as he states, "either profitless, entirely useless, or absolutely, and in some cases' greatly injurious."

What then was to be done? He was not the man to despair, save in a desperate case. But circumstances seemed singularly to concur in establishing the belief that any permanent improvement was hopeless. Putrescent manure, when applied, disappeared in the course of two or three years, and left not a vestige behind. The country seemed destined to sterility. Indeed, Nature had made barren a great portion of the tide-water country, and her decree was irreversable, with the present elements of the soil. The virgin land, when first stripped of the primeval forest, would in many localities scarcely pay the expenses of cultivation. And yet this soil had received the dropping foliage and the decaying timber from the time of the flood. It is not much to say, that 100 feet in depth of putrescent matter had been piled on its surface, and had rotted there in the lapse of years, and yet the soil had remained still poor. In this exhibition of Nature herself, was found an aswer to Col. Taylor's theory. An application of vegetable matter might restore the soil to its original productiveness, but no more. To make an improvement beyond this point, some change must be made in its mineral constituents.

But at that period little was known in this country of the science of agriculture. The investigation of its chemistry had just commenced in England by Sir H. Davy, who had entered as a pioneer the vestibule of the science, and raised his torch to dispel the dense darkness which had thus far enveloped the whole subject. While Mr. Ruffin was meditating on the last remedy for sterile lands,—removal to the West—he received a copy of "Davy's Agricultural Chemistry," which had been just published in this country. He read it with peculiar interest, though not acquainted with chemistry. It was obvious that, at least, the true philosophical mode of examining questions of agriculture had been reached. In the perusal of this author, there was one statement which appeared to afford some hope. As an illustration of the chemical defects of land and their remedies, he adduces an example a a soil of good apparent texture which was sent him from Lincolnshire by Sir Joseph Banks, as remarkable for sterility. Upon analyzing it, he found it contained sulphate of iron, the copperas of the shops; and he offered the obvious remedy of top-dress-with lime, which converted the poisonous substance into a manure.

It occurred to Mr. Ruffin that the soils of his section might be like the specimen of Sir Joseph Banks. They were of "good apparent texture," and they were sterile, and they always had been so. Putrescent manure made no permanent improvement. Might not the same poisonous substance exist in them? He immediately applied a proper test, but it disclosed no sulphate of iron. This supposition, then, must be abandoned. But might not some other substance, equally deleterious, exist? Might there not be some acid? He was induced to present this question to himself, and to incline to believe the affirmative from several circumstances. He says:

"These were, first, that certain plants known to contain acid, as sheep sorrel (the rumex acetorus) and pine, prefered these soils, and indeed were almost confined to them, and grew there with luxuriance and vigor, proportioned to the unfitness of the land for prodeing cultivated crops. Second: That of all the soils supposed to be acid, which I examined by chemical tests, not one contained any carbonate of lime. Third: That the small proportion of my land, and of all within the range of my observation, which was shelly, and of course calcareous, was entirely free from pine and sorrel, and moreover was as remarkable for great and lasting fertility, as the land supposed to be acid for the reverse qualities. Shells or lime would necessarily combine with and destroy all the previous properties of any acid placed in contact; and therefore, if acid were present universally, and acting as a poison to cultivated plants, it seemed plain enough why the shelly lands were free from this bad quality, and by its absence had been permitted to grow rich and continue productive. Still I could obtain no direct evidence of the presence of acid, either free or combined, by applying chemical tests to soils, nor was there any authority in my oracle, Davy's 'Agricultural Chemistry,' nor any other work which I had read, for supposing vegetable acid to be present in any soil."

But without any authority from chemistry, and in spite of his own failure to detect any such element in soils, by means of the imperfect analyses which he attempted, he felt a very strong confidence that such did exist, and that it was the cause of the sterility ef the lands and their incapacity for durable improvement. Fortunately, the beds of fossil shells which underlie nearly all the tide-water section of Virginia and the adjacent states, presented the material at hand to test the truth of his theory.

He began operations in Febuary, 1818, and applied between 125 and 200 bushels from one of these beds per acre, to 2½ acres of land. His anticipations were sanguine, and he watched with anxious interest the progress of the experiment. The marl, as it is commonly called contained 33 1-3 per cent of carbonate of lime. The land was planted in corn, and when the plants were only only a few inches high their superiority over the adjacent corn was manifest. This continued and increased as the crop advanced, and when the corn was gathered it was found that the increase was fully forty per cent. That of the wheat crop, which succeeded, was still more. This success on a small area was followed by extensive applications of marl each year; and each application testified to the truth of his theory. The acidity of the soil was neutralized, the acid pines disappeared, the land improved from year to year. The lime afforded food to the plants, medicine to the soil, and gave permanence to the manures. The retentive capacity which had been inferred from the fact that the most fertile and durable soils known were highly calcareous, was manifested by the marled land, more and more clearly each succeeding year. Mother earth changed her face and changed her constitution, under the healing influences of this salutary medicament, and now presented an appearance as different from her former self, as the healthy and robust man from the lingering and hectic victim of consumption. Verdant fields and abundant harvests were the monuments of his discovery. Broom-straw (andropagon) and poverty grass (aristida gracilis)gave place to luxuriant clover, and a poor, thin and stunted vegetation disappeared from the now smiling landscapes.

(*Remainder in our next.*)

Mould and Litter.

To the Editor of the American Farmer.

DEAR SIR:—We are, in truth, in the midst of one of the coldest seasons ever experienced in this section. The earth is completely locked up, and the progress of the plow, for the time being, stopped; agriculturists, consequently, will be backward, yet there are operations on the farm that can be forwarded—such as hauling rails, collecting materials for manufacturing manures, carrying out marl, swamp mud, (previously heaped) and last, though not least, mould from the forest. The forwarding of these operations add to the improvement and fertility of our farms. I have been engaged with hands and teams in hauling litter and mould (previously collected in heaps in the forest with hilling hoes,) on land intended for corn, this year, which is deposited in heaps, 5 by 6 yards. It is my purpose to cover about one-half of my corn shift with this mould and litter, if the season will admit of it, as I have nearly a sufficient collected to accomplish this. The remaining half I propose to manure liberally broadcast, with stable, hog-pen, barn yard and compost manures.

In regard to this mould and litter, I am informed that I am "robbing Peter to pay Paul;" I answer, that I never expect to cultivate this land—the removing of the mould and litter, will, for the time being, check the growth of timber thereon, yet I defy any one in five years, on the examination of this land, to inform me, whether the mould and litter has been removed;—I admit that the land for the time being will be injured, but, if kept in forest, it will speedily recover. I am further informed, that the cultivated soil is but little if any benefited by this application, but, fortunately, experience an practical experiments have taught me, as well as others, that by the liberal use of said mould and litter, on land previouly marled or limed, that the crops the first year can be doubled:—Col. Saml. Booth, of the county of Surry,(who is one of your subscribers,) has brought his farm to a remarkable state of fertility, by the application of marl, followed by an application of mould and litter, collected from piney old fields—His land was greatly improved by the application of marl, yet after the application of this mould and litter, his crops have rapidly increased. A few years ago, (after the liberal use of marl,) his annual return of wheat was from four to six hundred bushels of good wheat. The mould and litter was applied to the corn crop, ploughed in deep—the corn crop, followed by wheat—His corn crops have also rapidly increased. Mr. J. Watkins of the same county, has doubled the produse of his farm by this application—his farm three years ago yielding from 5 to 7 bushels of wheat for one seeded, last year gave the return of 14 for one seeded—His farm was marled ten or fifteen years ago, and was but slightly improved by the marl.—The application of mould and litter he commenced some four or five years ago, and from that period his farm has rapidly improved. *B. Jones*, Esq., near neighbour to Mr. W. has improved his farm in like manner.

In the spring of 1850 I laid off 20 acres of land, (which was marled in 1839 and '40, and which yielded in 1847 three barrels of corn per acre, and five bushels of wheat per acre, in 1848,) in checks five yards square, depositing in each check a large size heap of mould and litter, gathered with hilling hoes from piney old field, giving to each acre 194 heaps—these heaps were regularly spread, and the land ploghed with a two horse plough, running from 7 to 8 inches deep, laid off and planted in corn—from which I gathered in November, *five barrels per acre, giving an increase of two barrels per acre,* and from said 20 acres I reaped 10 bushels of excellent wheat, a good deal of which I disposed of for seed, giving an increase of five bushels per acre. Clover was seeded with the wheat, but killed by the drought. The above applications of mould and litter were all on land previously marled. In the application I am now making, no lime or marl has ever been applied.—The question with me is,—will the benefit from such an application be equal on unlimed land to that derived from limed or marled soils? Mould is a general name for finely divided earthy substance that forms the surface-soil of land, in which all kinds of vegetables strike root and thrive; and experiments go to prove, that plants do assimilate humus as direct nourishment. Dana in his Prize Essay, remarks:—"Mould contains a part of the carbon, oxygen and hydrogen—or, if you like the terms better,—mould of soil consists of the water, coal and salts of the plants—mould is truly manure." "The soil is the earth on which plants grow—the mould is the manure of that soil."

In Thaers "*Arinciples of Agriculture,*" he remarks:—"Humus is more or less a constituent part of the soil. The fertility of the land depends entirely upon its presence, for, if we except water, it is to this substance alone in the soil that plants owe their nutriment." Humus is the product of living matter, and the source of it. It affords food fo organization; without it nothing natural could have life—at least the most perfect animals could not exist; and, therefore, death and desiruction rre necessary and accessory to the reproduction of animal and vegetable life."

Voigt, in his supplement to the researches of Saussure, justly observes:—"that vegetable mould is vegetable matters partly decomposed, but not completely disorganized. It is a vast pervading plant—without organization, while itself bears and nourishes other plants, as a tree affords nutriment to all its branches and shoots. This vegetable mould is composed of vegetable bodies, and it may again be transformed into others of the same, or of a similar nature: humus contains less oxygen, but more carbon and nitrogen than the vegetables from which it is derived."

Your ob'dt. servant,

THOS. E. BLOUNT.

Sussex Co. Va. Jan. 24, 1852.

From the Goldsboro' Telegraph.

GREENVILLE, Feb. 27, 1852.

Mr. Editor—Since I left your pleasant village, I have seen something of the farming interest of Edgecombe, of which I had heard much, and believe me when I say, a part only had been told me. I was not only agreeably surprised at the heavy crops of the last season, (a very dry one) but much more so by the economy displayed in preparing grounds not only for present, but also succeeding croops. The true secret of farming seems in this county to have been found out, that is, when a crop is taken off to leave the land in better condition than it was before. As proof, let me state one instance, which I do, hoping to excite a spirit of rivalry in other counties.

Eight years since, Baker Staton purchased the plantation on which he now

Next suppose it took 240 days work at $1 per day,	240,00
	240,00
Now call the ashes worth 14 cents per bushel,	504,06
Nett gain,	264,06

The foregoing estimate for labor is quite too high, as this work may be done in the winter season when the days are short, and little else can be done to advantage.

This plan of securing ashes has been successfully practiced by several gentlemen in Edgecombe, and has been found to pay well, as ashes contain all the fertilizing properties that are required by growing plants. And another important advantage is, they have no stages of decomposition to pass through, consequently are certain in their effects, and enter upon their office at once.

In the particular of ashes, I know not that Edgecombe has any competitor in this part of the State, if elsewhere.—Indeed, I know of no section of the State where so much interest is manifested in collecting material for making and in liberally applying manures, as in Edgecombe.

I was told that a hand had picked six hundred and forty pounds of cotton per day, and that five hundred pounds was no uncommon day's work. I have but little knowledge of cotton raising, but understand that this would be considered great picking in the best southern cotton growing State.

Another gentleman told me he had raised 3127 pounds of seed cotton on a single acre, and 20 barrels, 2 bushels, 2 quarts and 1 pint of corn upon another single acre. There is no mystery in this large yield. It was the result of heavy manuring, proper plowing, &c. If one acre can be made to produce so abundantly, why may not many? And would it not be a matter of economy to get twenty barrels per acre instead of going over 20 acres to get that quantity.

I have heard much of Edgecombe in Edgecombe, but much more out of her, and I fear you will never have a correct idea of her improvements in Agriculture, until you witness them in person, for were I to write a whole instead of a half sheet, I should only have commenced.

A. SHERMAN.